

We Claim

1. A method of reducing notching in etched anisotropic openings in silicon over an insulator layer comprising anisotropically etching openings in silicon with a sulfur

5 hexafluoride etchant in a plasma etch chamber fitted with a powered substrate support while bias power is applied to the substrate support electrode during the etch step.

2. A method according to claim 1 wherein the applied bias power to the substrate support electrode is from 3 to 100  
10 Watts.

3. A method according to claim 1 wherein the bias power is pulsed.

4. A method according to claim 3 wherein the pulsed bias power is applied at a duty cycle of 10% to 80% using a 6 microsecond  
15 period.

5. A method according to claim 4 wherein the pulsed bias power is applied at a duty cycle of 35%.

6. A method according to claim 1 wherein, prior to etching, a deposition step using a fluorocarbon or hydrofluorocarbon gas  
20 is used to deposit a fluorine-containing polymer over the substrate.

7. A method according to claim 1 wherein after the main etch step, overetch deposition and etch steps are carried out to remove debris from the bottom of the opening.

8. A method according to claim 6 wherein no bias power is used during the deposition step.

9. A method according to claim 6 wherein the pressure in the chamber is maintained at about 5 to 300 millitorr during the deposition step.

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